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Computer gaming innovations lead to improved emergency communications

Center for Homeland Defense and Security

Naval Postgraduate School, Monterey, California

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Download the paper: “Server/Client Software Based Voice Over IP”

“The Technology for Homeland Security class provided an excellent framework for analyzing an ongoing Voice Over IP (VoIP) project I had been working on in Southeast Ohio through our Public Health Regional Medical Response Region made up of 21 counties,” said CHDS graduate Chris Smith.

That regional collaboration consists of public health departments, emergency management agencies and local hospitals, he added. His project consists of utilizing a unique form of VoIP to create a virtual intercom system throughout Southeast Ohio.

Smith, the Environmental Health Director in Portsmouth, Ohio, utilized the course paper assignment to write a proposal to the Federal Emergency Management Agency’s S&T TechSolutions Program in which he sought funding to implement a nationwide system based on the Southeast Ohio VoIP model. While the proposal was turned down, it helped him clarify the pros and cons of the Southeast VoIP system, he said. The class also led to his thesis, “Exploring the Plausibility of a National Multi-Agency Communications System for the Homeland Security Community: A Southeast Ohio Half-Duplex Voice over IP Case Study.”

1. Smith's thesis argued that the Homeland Security Community should be viewed as a "Megacommunity," a concept from a book assigned during the technology course, "Megacommunities: How Leaders of Government, Business and Non-Profits Can Tackle Today's Global Challenges Together" by Mark Gerencser.

   This community consists of three main components: Government, business, and non-profits.Ã‚Â Ã‚Â The thesis argued that the current national and state communications plans do not really address all three components of the community, but are hyper-focused on radios for first responders in an emergency situation. The purpose of the thesis was to assess the plausibility, or even the possibility, of a nationwide real-time communication system, based on a case study of a VoIP communications system utilized by computer gamers and the Southeast Ohio Regional Collaboration. Essentially, since 1995, millions of kids playing computer games have been utilizing this type of system to perform highly complex tasks in large groups made up of individuals from all over the world in real time. The gamers needed an extremely low cost system that was not dependent on geography and that utilized very little bandwidth. The products that evolved to meet their needs, Smith argued, are ideal to meet the needs of the homeland security community. For example, while on deployment with FEMA, days after Hurricane Rita hit Texas, the National Guard set up a T1 line and Smith communicated flawlessly with friends from all over the globe. Yet Smith could only communicate with the FEMA Disaster Field Office, only an hour away, via cell phone with poor reception and during a tedious daily conference call.Ã‚Â

2. The VoIP system that Smith has been studying and testing in Ohio is a 'half-duplex' form of VoIP. This means that it operates by pushing a button to talk, like radios first responders use, but enables communication between computers. While this could be seen as a primitive feature, it is the 'half-duplex' characteristic that makes a nationwide system possible. Because it only utilizes bandwidth when the button is pushed, it allows thousands of people to use the same voice server. And as there is no limit to the number of virtual voice servers that can be created, the system is essentially limitless and could theoretically be utilized to connect every member of the nationwide homeland community into a single-shared, real-time virtual intercom system at minimal cost.

   The specific software utilized in Southeast Ohio is called TeamSpeak. The Ohio Department of Health has been hosting a TeamSpeak server for the Southeast Region for more than three years, with almost no problems. TeamSpeak Systems, the company that produces this software, has introduced a newer version that corrects many of the security and usability issues with the older version.Ã‚Â

3. The Ohio Department of Health is in the process of updating its voice server with the new software and will launch the system statewide when that is completed. Smith hopes that the Department of Homeland Security will evaluate, and possibly sponsor, a nationwide voice test server, but for now he is dedicated in Southeast Ohio to moving the system up slowly, level by level. Also, TeamSpeak Systems is currently looking into extending the system to handheld devices, such as cell phones, which would further enhance the systems usefulness.

   The system has been utilized recently for H1N1 in the Southeast Ohio region. The ability to utilize the "Teamspeak" system, greatly enhanced response to the H1N1 vaccination campaign, Smith said.

Associated file: Server/Client Software Based Voice Over IP